

EXHIBIT 1

MICHAEL LEBBY, PH.D.

EXHIBIT 1 – MATERIALS CONSIDERED

Patents & File Histories

- U.S. Pat. No. 4,594,719 (Ackley)
- U.S. Pat. No. 5,140,745 (McKenzie, Jr.)
- U.S. Pat. No. 5,175,783 (Tatoh)
- U.S. Pat. No. 5,276,754 (Blair et al.)
- U.S. Pat. No. 5,334,029 (Akkapeddi et al.)
- U.S. Pat. No. 5,420,722 (Bielak)
- U.S. Pat. No. 5,535,296 (Uchida)
- U.S. Pat. No. 5,555,341 (Sharma et al.)
- U.S. Pat. No. 5,631,446 (Quan)
- U.S. Pat. No. 5,774,486 (Jiang et al.)
- U.S. Pat. No. 5,812,717 (Gilliland)
- U.S. Pat. No. 5,825,054 (Lee et al.)
- U.S. Pat. No. 5,835,199 (Phillips et al.)
- U.S. Pat. No. 5,838,703 (Lebby et al.)
- U.S. Pat. No. 5,940,277 (Farnworth et al.)
- U.S. Pat. No. 6,144,090 (Higashiguchi)
- U.S. Pat. No. 6,214,525 (Boyko et al.)
- U.S. Pat. No. 6,243,508 (Jewell et al.)
- U.S. Pat. No. 6,388,739 (Rice)
- U.S. Pat. No. 6,438,290 (Bietry et al.)
- U.S. Pat. No. 6,496,465 (Broome et al.)
- U.S. Pat. No. 6,751,379 (Capewell et al.)
- U.S. Pat. No. 6,863,170 (Gordon et al.)
- U.S. Pat. No. 6,894,849 (Yamamoto et al.)
- U.S. Pat. No. 6,919,996 (Wada et al.)
- U.S. Pat. No. 7,187,823 (Dimsdale et al.)
- U.S. Pat. No. 7,321,708 (Jenkins et al.)
- U.S. Pat. No. 7,558,300 (Dragic)
- U.S. Pat. No. 7,599,413 (Luo et al.)
- U.S. Pat. No. 8,179,619 (Kuwa et al.)
- U.S. Pat. No. 8,593,828 B2 (Blackwell, Jr. et al.)
- U.S. Pat. No. 8,730,456 (Goldberg et al.)
- U.S. Pat. No. 8,891,069 (Pedersen et al.)
- U.S. Pat. No. 8,934,509 (Savage-Leuchs et al.)
- U.S. Pat. Appl. No. 2003/0043363 A1 (Jamieson et al.)
- U.S. Pat. Appl. No. 2005/0089280 A1 (Kumar et al.)
- U.S. Pat. Appl. No. 2007/0158807 A1 (Lu et al.)

- U.S. Pat. Appl. No. 2007/0181810 A1 (Tan et al)
- U.S. Pat. Appl. No. 2009/0226131 A1 (Zhang et al.)
- U.S. Pat. Appl. No. 2010/0046953 A1 (Shaw et al.)
- U.S. Pat. Appl. No. 2014/0211436 A1 (Behringer et al.)
- U.S. Pat. Appl. No. 2016/0291136 A1 (Lindskog et al)
- European Pat. No. 0 452 985 A2 (Norris)
- European Pat. No. 0 581 012 B1 (Lebby et al.)
- European Pat. No. 0 690 319 A1 (Lebby et al.)
- Korean Pat. Appl. KR20130140554A (Mheen et al.)

Court Documents

- Plaintiff Waymo LLC's Reply in Support of its Motion for Preliminary Injunction, filed April 21, 2017
- Reply Declaration of Gregory Kintz, filed April 21, 2017

Transcripts

- Deposition of Gregory Kintz, taken on April 26, 2017
- Deposition of Daniel Gruver, taken on April 20, 2017

Articles & Literature

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- Bardinal, Veronique et al., *Advances in Polymer-based Optical MEMS Fabrication for VCSEL Beam Shaping*, IEEE 21(4), 2700308 (2014)
- Barenz, Joachim et al., *Eyesafe imaging LADAR/infrared seeker technologies*, Proc. SPIE 5791, Laser Radar Technology and Applications X, 51 (August 5, 2005)
- Barenz, Joachim et al., *All solid state imaging infrared/imaging LADAR sensor system*, Proc. SPIE 5459, Optical Sensing, 171 (September 1, 2004)
- Behringer, M. et al., *More Brilliance from High Power Laser Diodes*, Proc. SPIE 4993 (2003)
- Brickeen, Brian et al., *High energy microlaser and compact MOPA transmitter*, Proc. SPIE 8039, Laser Technology for Defense and Security VII, 80391A (May 25, 2011)
- Chen, Songsheng et al., *One-Joule Double-pulsed Ho:Tm:LuLF Master-Oscillator-Power-Amplifier (MOPA)*, OSA Trends in Optics and Photonics, Paper 740 (Optical Society of America, 2005)
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- Gray, Stuart et al., *502 Watt, single transverse mode, narrow linewidth, bidirectionally pumped Yb-doped fiber amplifier*, Vol. 15, No. 25, OPTICS EXPRESS 17044 (December 10, 2007)
- Halterman, Ryan et al., *Velodyne HDL-64E LiDAR for Unmanned Surface Vehicle Obstacle Detection*, SPIE Proc. 7692 (April 5-9, 2010)
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- Luttmann, J. et al., *Very high-efficiency frequency-tripled Nd:YAG MOPA for spaceborne lidar*, Proc. SPIE 6871, Solid State Lasers XVII: Technology and Devices, 687109 (February 14, 2008)
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- Vinoya, Josh, *Rotary LiDAR Sensors for Use in Fully Autonomous Vehicles*, Conference Session B8, Paper 76
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- Velodyne High Definition LiDAR HDL-64E (2014)
- Velodyne User's Manual and Programming Guide, HDL-63E S2 and S2.1
- Velodyne User's Manual and Programming Guide, HDL-64E S3

Websites

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- https://www.rp-photonics.com/tutorial_fiber_amplifiers10.html
- https://www.thorlabs.com/newgrouppage9.cfm?objectgroup_id=7556

Production Documents

- SC_PROD003.P

Other

- Quinn List of 50 Files

**All documents listed in Exhibit 2 of my declaration in support of Defendants' Opposition to Plaintiff Waymo LLC's Motion for Preliminary Injunction.